

## ABSTRACT

This invention relates to the development of a mammalian expression vector, under which expression of the structural genes of western equine encephalitis virus have been placed under the control of an eucaryotic promoter. When the recombinant vector is administered to mammalian cell culture or using a cell-free transcription/translation system, *in vitro*, authentic structural proteins of western equine encephalitis virus are produced as verified by reactivity with monoclonal antibodies developed to western equine encephalitis virus. When the recombinant DNA molecule is administered *in vivo*, a protective immune response is induced, thereby enhancing protection of the individual against subsequent infection by western equine encephalitis virus. In a similar manner, DNA vaccines to related alphaviruses (Venezuelan and eastern equine encephalitis viruses) could also be developed.